

FACT SHEET

Alabama Company Marketing NASA Portable Infrared Inspection System



An Alabama company is successfully marketing the TESA 2000 Portable Inspection Instrument, used for surface optical measurement, developed under a Dual Use Agreement with NASA at Kennedy Space Center.

AZ Technology, Inc., of Huntsville was selected by NASA to jointly develop a portable infrared and solar reflectometer meeting both NASA and commercial applications. The TESA 2000 represents substantial innovation and considerable advancement in laboratory portable instrumentation for determining ambient temperature total emittance and solar absorptance of test surfaces. Company spokesman John Harchanko said the TESA 2000 is compact, lightweight, rugged, and ergonomically engineered for ease of use in the field or in the laboratory. The instrument, costing about \$70,000, comes with two carrying cases, two rechargeable batteries, battery charger, instrument inspection head, display unit, and an operator vest. It offers internal, nonvolatile storage of up to 800 field measurements, as well as multiple-scan storage convenience in the laboratory.

This innovation will benefit multiple users in manufacturing, science, and the military, in addition to serving the needs of NASA at KSC in processing the Space Shuttle and its payloads. AZ Technology is a technology services company specializing in scientific and engineering research and instrumentation development. The company has particular expertise in spaceflight experiment development, production instruments for scientific measurements, advanced materials and coatings, and Internet software for space and commercial applications. Two other AZ Technology instruments, the Optical Properties Monitor (OPM) and the Space Portable SpectroReflectometer (SPSR) have flown on the Space Shuttle and the Mir Space Station. Future projects are in the works for the International Space Station.

NASA engineer John Giles said the Agency had a critical need for a portable inspection instrument to measure its space hardware for major thermal interactions with energy

absorbed from the sun and the heat radiated to deep space. Measuring the solar absorptance and total emittance properties of the Space Shuttle insulation blankets, orbiter, and payload surfaces is critical for thermal management, because conduction and convection are not significant in space. Due to the thermal, mechanical, and environmental stresses of space flight on the external surface of the Space Shuttle fleet, KSC is required to perform frequent inspections. Since technicians must take multiple measurements from elevated work platforms in awkward positions, the new instrument had to be lightweight, easy to hold, portable, and most important, have the accuracy of bench top instrumentation. A search for commercial instruments was unsuccessful.

NASA decided a dual-use project was required, and in 1996, with help from the Research Triangle Institute's NASA Technology Applications team, developed design goals for the instrument in cooperation with industry. AZ Technology was selected due to its expertise in the field of optical property measurement and its commitment to providing high quality hardware. Under the agreement, KSC contributed cofunding and testing/field operations expertise while AZ Technology contributed cofunding and manufacturing/product design expertise. Testing was completed in spring 1998. KSC expects the TESA 2000 to bring 50 percent savings in surface inspection costs. Prior to the portable inspection instrument's development, NASA used an old infrared reflectometer based on 1960's bench test technology that was pressed into service as a field instrument on space vehicles and payloads. The unit's weight of over 40 pounds, short cable, and lack of handholds made it cumbersome to use.

The TESA 2000 is a proven benefit to space applications, including NASA's Space Shuttle fleet, its payloads, and manufacturers, servicers, and users of manned space vehicles, manned stations, and spacecraft for telecommunications, science, meteorology, navigation, remote sensing, and imaging. Beyond space applications, the TESA 2000 can be used by companies involved with the military, paints/coatings, solar energy, and automotive glass. The military could use the technology for evaluating low observable coatings for land, sea, and air vehicles. Commercial coating manufacturers and testing laboratories could use the technology to measure surface properties of coating panels in environmental tests for weathering. Companies involved with solar cells or solar heating systems could use the technology to evaluate efficiency. TESA 2000 could also be used by automotive glass manufacturers and testing laboratories to evaluate windshields and coatings for Department of Transportation reflectance standards.

AZ Technology, Inc. maintains an informative Web Site at www.aztechnology.com and company representative John Harchanko can be reached at (256) 837-9877 ext. 143, e-mail: johnh@aztechnology.com.

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